AQUABOR®

Liquid Boron For Soil and Foliar Applications

AQUABOR is a 10% liquid formulation of boron. It is the highest liquid formulation of boron available. Plants uptake boron in the form of boric acid (H_3BO_3). **AQUABOR** is made from boric acid, providing plants a highly soluble, stable, readily available form of boron. **AQUABOR** is designed for soil and foliar application.

Boron is required for all plant growth and plays an important role in the reproductive process of the plant. Boron also influences conversion of nitrogen and carbohydrates into more complex substances such as protein, affects the transfer of sugars within the plant, exerts marked influence on cell division, and aids in the formation of certain membranes.

Boron-deficiency symptoms frequently appear first in the terminal growth of the plant. The terminal bud often dies, resulting in development of many lateral branches. Young leaves of boron-deficient plants are yellowish green in color. At low boron levels, flower buds become chlorotic and bracts flare open. Many of the fruiting forms become dried out and shed from the plant.

Boron is non-mobile in most plant species and only moderately phloem mobile in others. For this reason it is important to supply plants with adequate amount of boron throughout the growing season. Boron enters the xylem and is transported to the growing (cell dividing) regions of the plant where it is incorporated into leaf or fruit tissue or used in the process of carbohydrate conversion. Boron plays a key role in cellular integrity, providing a key component to the mortar, so to speak, between cells. Research has shown that boron and calcium application in combination yield the best results in regards to tissue rigidity and prolonged shelf life.The first AQUABOR application should be applied 2 to 3 weeks before bloom and repeated as needed determined by tissue analysis. Generally two or three applications a year are sufficient.

Benefits of Using Aquabor

- 10% Boron – Highest liquid form available
- Derived from Boric Acid
- Completely soluble
- No dust
- Easy to use liquid formula
- Completely non phytotoxic when applied at the labeled rate

Importance of BORON

- Maintains Calcium in a soluble from, thus insuring its proper utilization
- Needed at location of actively dividing cells
- Key component of sugar translocation and carbohydrate metabolism
- Plays an important role in flowering, pollen tube germination formation, metabolism and hormone activity
- Essential for the relocation of calcium in the plant

Common Products Available

Product	Physical State	% Boron
AQUABOR	Liquid	10.0%
Albion Liquid Boron	Liquid	5.0%
Greenleaf Boron	Liquid	1.8%
N-Boron	Liquid	5.4%
Tech-Spray Liquidbor	Liquid	2.5%

JH Biotech
Innovation for a Greener Earth

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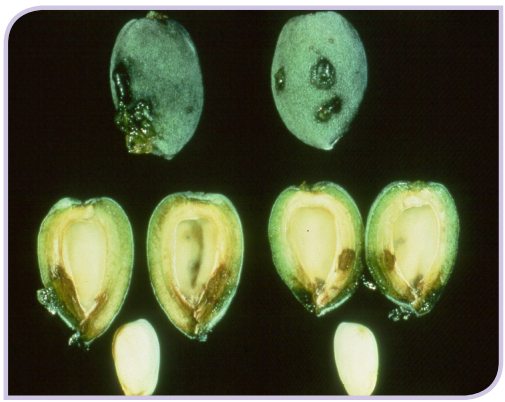
CITRUS: Boron deficiency is known as “hard fruit” because the fruit is hard and dry due to lumps in the rind caused by gum impregnations. The chief fruit symptoms include premature shedding of young fruits. Such fruit have brownish discolorations in the white portion of the rind (albedo), described as gum pockets or impregnations of the tissue with gum and unusually thick albedo. Older fruit are undersized, lumpy, and misshapen with an unusually thick albedo containing gum deposits. Seeds fail to develop and gum deposits are common around the axis of the fruit. The first visual symptoms of boron deficiency are generally the death of the terminal growing point of the main stem. Further symptoms are a slight thickening of the leaves, a tendency for the leaves to curl downward, and sometimes chlorosis.

Young leaves show small water-soaked spots or flecks that become translucent as the leaves mature. Associated with this symptom is a premature shedding of leaves beginning at the treetop that soon leaves the tree almost completely defoliated. Continuation of the symptom is tree dieback and bushy upright growth similar to that of Zn deficiency. Fruit symptoms are the most constant and reliable tool to diagnose boron deficiency.



The boron deficiency causes gomosis and internal necrosis in almonds. In the almond variety peerless, brown gummy area develop in the endocarp with gum extruding to the surface of the nut.

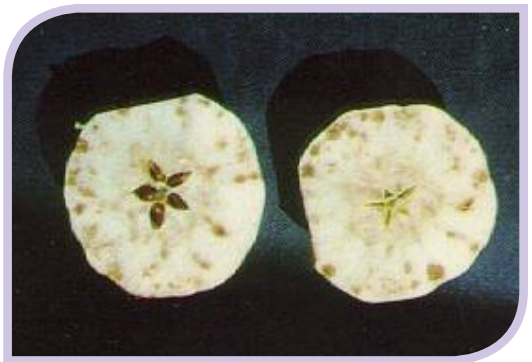
BORON DEFICIENCY: Death of growing points and deformation of leaves with areas of discoloration.

BORON EXCESS: Leaf tips become yellow followed by necrosis. Leaves get a scorched appearance and later fall off.

Boron deficiency in celery appears as horizontal cracking on mature petioles. The petioles tend to be more brittle than normal and crack easily during harvest and packing.

Tomato plants with boron deficiency have stunted growth and are dwarfed. The leaves are twisted and small in size, and may have a variegated appearance. The young shoots may wither and die.

Melon plants suffering from boron deficiency become stunted or dwarfed. The young leaves of new shoots are smaller than normal, and curled back. They are often discolored with yellow mottles.



There are two phases of the disease on apples: namely, external cork, characterized by surface spots, and internal cork, characterized by lesions in the core or core and flesh. In apples it is known that if boron deficiency does not become severe until late in the fruit developmental period, the main symptom may be internal cork formation.

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